

# The taxonomic status of *Anthus berthelotii*

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The taxonomic status of *Anthus berthelotii*, endemic to the Canary Islands and Madeira, has been disputed. The early authors referred it to, in succession, *A. trivialis* (Webb, Berthelot & Moquin-Tandon, 1836–44), *A. pratensis* (Vernon Harcourt, 1853) and *A. campestris* (Bolle, 1857), and finally recognized it as a distinct species (Bolle 1862). The latter author suggested that it has close affinities with both the *A. spinoletta* complex\* and with *A. campestris*. Hartert (1910) argued against the proposed relationship with the *A. spinoletta* complex, but did not propose an alternative view on its systematic position. Lack & Southern (1949) and Volsøe (1951) considered it to be an old insular form of *A. campestris*. Hall (1961) argued that depending on which characters are selected as being of most importance, *A. berthelotii* could be closely related to *A. campestris* as well as to several other *Anthus* species. Most modern taxonomists (Vaurie 1959, Voous 1977, Sibley & Monroe 1990) seem to follow Lack & Southern (*op. cit.*) and Volsøe (*op. cit.*), placing *A. berthelotii* immediately after *A. campestris* in the systematic sequence. Recently, however, Bourne & Roselaar in Cramp (1988) suggested that *A. berthelotii* has closer affinities with the *A. spinoletta* complex.

The aim of this paper is to reaffirm that *A. berthelotii* is most closely related to *A. campestris*. *A. berthelotii* was studied on Gran Canaria in August 1978 and on Madeira in October and November 1986 and January 1987. Museum skins were studied in the British Museum (Natural History), Tring, Tape-recordings of *A. berthelotii*, obtained from the British Library of Wildlife Sounds and Dr. Hans-Wolfgang Helb, as well as KM's recordings, were analysed. The literature was searched for relevant data.

The term 'larger' pipits refers to *A. richardi*, *A. godlewskii*, *A. campestris*, *A. similis* and *A. sylvanus* of the Palaearctic pipits, whereas 'smaller' pipits refers to the other Palaearctic pipits.

## Range

*Anthus berthelotii* is endemic to the Canary Islands and Madeira, where it is resident. The population of Madeira and Porto Santo is regarded as a separate subspecies, *madeirensis*, with slightly longer bill compared to the nominate subspecies. No other *Anthus* species breeds on these islands; *A. pratensis* and *A. trivialis*, possibly also *A. campestris*, are the only other pipits recorded (Bannermann 1963, Bannermann & Bannerman 1965, Cramp 1988). *A. campestris* (breeding in North Africa and southern and central Iberian Peninsula) is the only pipit breeding near *A. berthelotii*.

\*Consisting of *A. spinoletta*, *A. petrosus*, and *A. rubescens*, formerly regarded as conspecific but now usually recognized as separate species (see Alström & Mild 1987, Knox 1988).

TABLE 1

Ratios of tail/wing, bill/wing and tarsus/wing (mean values) of four pipits. Bill length measured to skull. Personal measurements of museum specimens.

	Tail/wing	Bill/wing	Tarsus/wing
<i>A. berthelotii</i> (n = 42)	0.76	0.22	0.30
<i>A. c. campestris</i> (n > 100)	0.73	0.21	0.28
<i>A. p. petrosus</i> + <i>littoralis</i> (n > 100)	0.69	0.20	0.26
<i>A. pratensis</i> (n > 100)	0.71	0.18	0.27

### Habitat

*A. berthelotii* prefers dry, open areas interspersed with bushes. On Madeira it is associated with open grasslands, especially on the upland plateau, but also occurs in overgrazed, dry, secondary grasslands along the coast. In the Canary Islands it is found from sea-level to about 2500–3000 m. Here it occurs in a wider variety of habitats such as open cultivated ground, shrub-covered mountain slopes, dunes, semi-desert areas of volcanic rock and in more restricted open places in wooded areas such as clearings and tracks (Bannermann 1963, Bannermann & Bannerman 1965, Cramp 1988, and personal observations).

*A. berthelotii*'s habitat preferences match those of *A. campestris*. In this respect they differ from all other western Palaearctic pipits, except for *A. similis*.

### Size and structure

*A. berthelotii* is the smallest Palaearctic pipit, being marginally smaller than *A. pratensis*. However, in the field it often gives the impression of being considerably larger, probably because of its proportionately long tail, tarsus and bill—a further indication of its closer relationship to the 'larger' pipits (Table 1).

Bourne & Roselaar (*loc. cit.*) state that structure of wing, bill and foot suggest closer affinities with the *A. spinoletta* complex than with *A. campestris*. We do not agree with this, since both wing-formula and foot (especially hind claw) are also very similar to *A. campestris*. The bill of *A. berthelotii* is indeed long and slender and reminiscent of that of *A. spinoletta*, although it is proportionally longer (Table 1).

In fresh plumage all of the 'smaller' pipits have their tertials rather evenly spaced, unlike all of the 'larger' species. In *A. berthelotii* the spacing of the tertials is the same as in the 'larger' pipits (Fig. 1).

### Plumage and bare parts

Bourne & Roselaar (*loc. cit.*) argued that general colour, pattern on sides of head and streaking on chest suggest a closer relationship with *A. spinoletta/petrosus* than with *A. campestris*. We do not agree that the general coloration of *A. berthelotii* is closer to that of the *A. spinoletta* complex than to *A. campestris*; it is distinctly different from both. Moreover, in our opinion, the pattern on the side of the head of *A. berthelotii* is definitely closer to that of *A. campestris* than to *A. spinoletta/petrosus*. *A. berthelotii* shows a complete eye-ring, a distinct

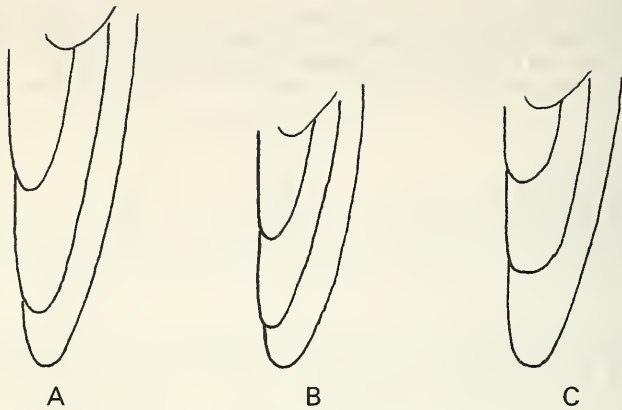


Figure 1. Tertial spacing in 'larger' pipit (A), *Anthus berthelotii* (B), and 'smaller' pipit (C).

moustachial stripe and rather pale ear-coverts with a darker eye-stripe behind the eye, much like *A. campestris*, whereas *A. spinoletta/petrosus* show a broken eye-ring, an indistinct moustachial stripe and rather uniformly dark ear-coverts. The distinct streaking on the underside of *A. berthelotii* may seem to indicate a closer affinity with *A. spinoletta/petrosus* than with *A. campestris*, as suggested by Bourne & Roselaar. However, in *A. berthelotii* the streaks are usually smaller, darker and more sharply defined than in *A. spinoletta/petrosus*, and more confined to the breast.

The tail-pattern of *A. berthelotii* is very similar to that of *A. campestris*, the penultimate feather showing a rather long pale wedge. In *A. spinoletta/petrosus* the second outermost rectrix shows at the most a small pale wedge. The median and greater coverts of *A. berthelotii* are patterned more as in *A. spinoletta/petrosus*. In *A. berthelotii* the tarsus/toes and base of the lower mandible are flesh-coloured as in *A. campestris*, while in *spinoletta/petrosus* the tarsus/toes, and in the breeding season also the lower mandible, are usually dark brown or blackish.

To conclude, in our opinion, the plumage of *A. berthelotii* is distinctly different from all other western Palearctic pipits although closest to *A. campestris*.

The juvenile plumage of *A. berthelotii* is clearly different from the subsequent plumages. In juveniles the mantle feathers, and to a lesser extent also the scapulars and crown, have extensive, rather clear-cut dark centres and narrow, pale fringes (looking scalloped when fresh), whereas in subsequent plumages these feathers are rather uniformly coloured, with less extensive and more diffuse dark markings and no distinct pale fringes. Moreover, the juvenile median and greater coverts, tertials and central pair of tail-feathers have more clear-cut dark centres and somewhat paler fringes/edges than in fresh adult. The juvenile plumage of *A. berthelotii* is basically similar to that of *A. campestris*, as well as to that of the other 'larger' Palearctic pipits. In the 'smaller' species, on the other hand, the juvenile plumage is basically similar to the adult.

### Moult

Unlike other Palaearctic pipits except *A. similis*, *A. sylvanus* and most *A. p. petrosus* and some *A. p. littoralis*, *A. berthelotii* lacks the partial pre-breeding moult of head and body feathers. Bourne & Roselaar suggest that this indicates a closer relationship with *A. spinoletta/petrosus* than with *A. campestris*. In our opinion the lack of a pre-breeding moult is of little taxonomic importance and merely reflects the fact that *A. berthelotii* is a resident insular bird with no need to moult in spring.

### Vocalisation

The song is very simple. It consists of a single dissyllabic note, monotonously repeated approximately every second or slightly slower; *tchelee tchelee tchelee tchelee tchelee*. . . The song is very similar to that of *A. campestris*, but usually each unit is repeated somewhat faster and the tone is less melancholy. The song is very different from that of all the 'smaller' pipits of the Palaearctic, which have more varied and more complex songs, typically consisting of a long series of several different segments and usually including trills as well as more fluty notes. See Bergmann & Helb (1982) and Cramp (1988) for sonagrams and more detailed descriptions of the song of *A. berthelotii*.

Like most other pipits, *A. berthelotii* gives a variety of calls. The most common one, given both in flight and from the ground, is a single *tcheLEE* or *tchirlee*, similar to a song-unit but somewhat shorter and more explosive. Other calls are a somewhat lower-pitched *chup* and a slightly nasal *tcheep*. These calls are reminiscent of the corresponding calls of *A. campestris*, but they are distinctly different from the calls of the 'smaller' pipits.

### Behaviour

The song-flight of *A. berthelotii* is significantly different from that of the 'smaller' pipits, but is very similar to that of the 'larger' pipits, especially *A. campestris*. During the song-flight the male sings while circling in deep undulations for some time, and then plunges silently to the ground. The 'smaller' pipits (except *A. gustavi*) usually ascend from a perch and then, as the peak is reached, 'parachute' to a perch or the ground; the song is usually given both on the ascent and on the descent.

Like the 'larger' pipits *A. berthelotii* does not display the characteristic antagonistic behaviour, with drooping wings and slightly raised tail, of the males of most 'smaller' pipits (except for *A. trivialis*, *A. hodgsoni* and *A. gustavi*).

### Discussion

In our opinion *A. berthelotii* clearly belongs to the group of the 'larger' pipits. This is demonstrated by, e.g., (1) the tertial spacing, (2) the juvenile plumage, (3) the primitive song, (4) the undulating song-flight, and (5) the lack of the antagonistic behaviour of the males of most 'smaller' pipits.

Although our experience of *Anthus* species from the Afrotropical region is limited to studies of museum specimens and the literature, none appears to be very closely related to *A. berthelotii*. However, several

characters indicate a close relationship between *A. berthelotii* and *A. campestris*. (1) The distribution of *A. berthelotii* constitutes an extension of that of *A. campestris*, thus indicating that *A. berthelotii* may be an island isolate of *A. campestris*. (2) The preference for dry, open habitats perfectly matches the choice of habitat of *A. campestris*, but disagrees with that of all other western Palaearctic pipits, except for *A. similis*. (3) The plumage is closer to that of *A. campestris* than to that of any other western Palaearctic pipit. (4) The song-flight is most similar to that of *A. campestris*. (5) The song is very similar to that of *A. campestris*.

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